Remarks/Arguments

In the final Office Action dated October 2, 2008, it is noted that claims 1-14 are pending and that claims 1-14 are rejected.

In the present amendment, Claim 1 has been amended by clarifying that the "commands having the same static priority are further prioritized on the basis of a dynamic priority allocation for the channels." Independent Claim 13 is likewise changed accordingly. Support for such amendments is found in the specification as originally filed and as set forth in Applicant's response dated June 23, 2008. No new matter has been added.

Rejection of claims 1, 5, 10, 13 and 14 under 35 USC §102(b) as being anticipated by Chauvel et al. (US Pat No 6,412,048) (hereinafter "Chauvel")

Claims 1 and 13, and the remaining claims through dependency, have been clarified by stating that the commands having the same static priority are then further prioritized due to a dynamic priority for the channels. Applicant respectfully submits, as argued in Applicant's response dated June 23, 2008, that this is not disclosed in Chauvel.

In the Response to Arguments section of the final Office action, the Office takes the position that the features upon which applicant relies are not recited in the rejected claims. By this amendment applicant has clarified claims 1 and 13 as noted above and reiterates the following arguments:

Chauvel appears to teach a method for controlling memory access where there are a plurality of requests. Chauvel teaches in Fig. 4 a certain order of commands (deactivate, activate, read/write; 54, 56, 59; 68, 70, 64). This order of commands has to be followed in every DRAM access routine. The access routine presented by Chauvel in Fig. 4 shows a flow chart to be followed if one channel accesses a specific memory part in the DRAM.

Channels are prioritized by Chauvel according to Table 2 shown in col. 15. Prioritization of channels can be changed, for example, see column 15, lines 20-24.

Thus, it appears that Chauvel teaches the prioritization of channels; however, once a channel is selected, then the all commands as described in Fig. 4 are transmitted in a predefined order.

In other words, according to the teaching of Chauvel, a priority would be defined for a channel, for example for the Input channel. Then all commands necessary for this operation according to Fig. 4-Chauvel would be transmitted (activate (56, 70), read/write (49, 64), precharge (not shown in Fig. 4-Chauvel). Then the next channel would be selected according to its priority and the necessary commands would be transmitted. In Chauvel the priority of commands is not considered across multiple channels, only the channel priority is considered, then the commands transmitted in order.

In contrast, applicants' claim 1 recites a method for communication between an IC and an external DRAM, where the external DRAM has at least one memory bank and communicates with the IC via two or more channels. The transmissions of memory bank commands of multiple channels are prioritized on the basis of a static priority allocation for commands and the commands having the same static priority are further prioritized on the basis of a dynamic priority allocation for the channels.

Thus, in Chauvel a channel would be selected according to the priority and then all the commands transmitted in order. Chauvel does not prioritize the commands of multiple channels. For example, in Chauvel if the Read or Write command takes precedence, the command would only take precedence in the selected channel. The command would not take precedence over a lower priority command on another channel. In Chauvel the priority of commands is not considered across multiple channels, only the channel priority is considered, then the commands transmitted in order.

In contrast, according to applicants' claim 1 transmit commands of multiple channels are prioritized according to a static priority for commands and the commands having the same static priority are further prioritized on the basis of a dynamic priority for channels.

For example, according to an embodiment, if multiple channels request to access the DRAM at the same time, the requests are not handled one after another according to channel priority as in Chauvel. According to an embodiment of applicants, commands of multiple channels are analyzed according to their static priority for commands (see Table on page 5). For this analysis it is not relevant which channel requests to transmit the command. If there are multiple commands with the same priority, they are transmitted according to the dynamic prioritization of channels

according to Fig. 4 of the present application. This is disclosed on page 9, lines 8-17 of the specification.

In contrast, according to the teaching of Chauvel, a priority would be defined for a channel, for example for the Input channel. Then all commands necessary for this operation according to Fig. 4-Chauvel would be transmitted (activate (56, 70), read/write (49, 64), precharge (not shown in Fig. 4-Chauvel). Then the next channel would be selected according to its priority and the necessary commands would be transmitted. A completely different order of transmitted commands would arise using the teaching of Chauvel.

Therefore, Applicants submit that for at least the reasons recited above independent claim 1 is not anticipated by the teachings of Chauvel, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable there under.

Furthermore, dependent claims 5, 10 and 14 depend directly or indirectly from independent claim 1 and recite additional features therein. As such and for at least the reasons set forth herein, Applicants submit that dependant claims 5, 10 and 14 are also not anticipated by the teachings of Chauvel and fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

Since claim 13 includes apparatus features substantially similar to those found in claim 1, it is also submitted that Chauvel does not teach, show, or suggest all the elements of Applicants' claim 13, as such, claim 13 fully satisfies the requirements of 35 U.S.C. § 102 and is patentable there under.

Rejection of claim 2 under 35 USC 103(a) as unpatentable over Chauvel in view of Kirsh (GB 2,396,442).

With regard to claim 2, it is respectfully submitted that claim 1 is allowable over Chauvel, and therefore claim 2 is allowable at least by virtue of its dependency from an allowable base claim because Kirsh fails to teach the features lacking in Chauvel as discussed above.

Therefore, it is respectfully submitted that the combination of references fails to render the claim obvious since the combination lacks elements of the claimed invention. Therefore, it is respectfully submitted that claim 2 is not unpatentable over Chauvel in view of Kirsh.

Rejection of claim 3, 4, 6, 7-9, 11, and 12 under 35 USC 103(a) as unpatentable over Chauvel in view of further references.

It is respectfully submitted that none of the further references teach the features lacking in Chauvel as discussed above. Thus, applicants essentially repeat the above arguments for each dependent claim and respectfully request each rejection be withdrawn.

Conclusion

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at (609) 734-6813, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed to have been incurred by virtue of this amendment. However if a fee is incurred on the basis of this amendment, please charge such fee against deposit account 07-0832.

Respectfully submitted,
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